Open Access
J. Sustain. Econ. Dev., 2023, 1(1):1-7.
ISSN (Online):3005 -2513; ISSN (Print):3005-2505
DOI: https://doi.org/10.22194/JSD/23.1006
https://societyfia.org/journal/JSD

Effect of oil price on economic growth in middle-income oil importing countries

Bukhtawar Babar, Saira Arsh and Samia Nasreen*

Economics, Lahore College for Women University Lahore, (Pakistan); Economics, Lahore College for Women University Lahore (Pakistan)
*Corresponding author's e-mail: samia.nasreen@lcwu.edu.com

This study examined the effect of oil price on economic growth in middle-income oil importing countries for the period 1990 to 2020. The dependent variable was GDP, and the explanatory variables were Real Oil Price Gross Fixed Capital Formation, Inflation, Real Interest Rate, Labor Force, and Trade Openness. Panel cointegration techniques such as Fisher/ Johansen panel cointegration and Pedroni panel cointegration were used to achieve the objective of this study. Panel cointegration results indicated that a stable long-run relationship existed among variables in the case of middle-income oil importing countries for the period 1990 to 2020. Fully Modified Ordinary Least Square (FMOLS) was used to estimate long-run coefficients. The results showed negative relationship between oil prices and economic growth which indicated that increase in oil price negatively affect economic growth in sample countries. The findings of impulse response function (IRF) showed the deviation of real oil price in economic growth. Therefore, in order to reduce adverse impact of oil price on economic growth, particularly over the long term, it would be crucial for policymakers to consider, implement, and use efficient energy policies.
Keywords: Oil Price; economic growth; panel data; middle-Income oil importing countries.

INTRODUCTION

The relationship between oil price and economic growth receives great attention for policy making of oil importing countries during the last few decades. However, the direct relationship is not well defined in empirical literature due to difference in country characteristics, variables used and variation in estimation techniques. However, most of the studies concluded that the association of oil prices and economic growth is always negative, whether it is a developed or developing country. Therefore, this study will examine the effect of oil prices on the economic growth of middle-income oil importing countries.

Oil is now the most essential indicator of economic growth, due to its exceptional importance in meeting the world's energy needs. Pakistan's daily crude oil production has remained significantly low compared to the demand. For most developing countries, a large proportion of GDP is used in the import of oil. Worldwide oil demand has expanded quickly since 2010, leading to the increase in oil price.

Middle-income oil importing countries such as Bangladesh, Belarus, Brazil, China, Colombia, Egypt, Fiji, Libya, Malaysia, Maldives, Indonesia, Jordan, Kenya, Pakistan, Peru, Philippines, Sri Lanka, Thailand, Tanzania, Ukraine, Vietnam, are net importers of crude oil. Due to the rapid industrialization and economic growth in the region, oil consumption has witnessed a steady growth in the recent past (El-Badri, 2011). On the other hand, due to the steady rise in crude oil price, Japan and US have reduced their per day oil consumption significantly in the recent past. Unlike developed countries, the developing countries of South Asia are unable to develop a long-run energy policy.

This research found that OPEC could reduce their oil import bills and overall energy costs substantially by exploiting and developing their indigenous resources more vigorously. The greatest potential for increasing domestic commercial energy production lies in petroleum, natural gas, coal, hydroelectric, and nuclear energy subsectors. The development of these resources requires, first, Better analysis of national policies, strategy formulation, and planning for the energy sector. Second, acceleration of energy resource identification, assessment, utilization, and commercialization. Third, improved capability of energy sector institutions to manage and operate such projects. In view of the massive and non-marginal nature of many of these schemes, more pre-investment activity is required to avoid serious misallocations of investments and waste. Fourth, the quantity of subsidies for various oil products must be calculated taking into account

Babar, B., S. Arsh and S. Nasreen. 2023. Effect of oil price on economic growth in middle-income oil importing countries. Journal of Sustainable and Economic Development 1:1-7.
[Received 11 Jan 2023; Accepted 2 Feb 2023; Published 21 Jun 2023]

the macroeconomic structure of the country. Finally, by adjusting prices by a predetermined rate in accordance with the local currency, the public authority may provide clients with value increases when spot costs increase generally. At the same time, mobilization of both domestic and foreign financial resources to support the projects themselves requires a major effort by the OPEC. It has not been accepted as an empirical fact the negative correlation between oil prices and real output. Hamilton (1985) reported a robust link between the "oil crisis" of the 1970s and the U.S recession. Mork (1989) confirmed Hamilton results finding a strong negative correlation between oil price increases and the growth, the relation based on oil price increases persist in a sample extended beyond the 1985-1986 oil price decline.

Numerous studies examined the effect of oil prices on economic growth, such as Jimenze & Rodriguer (2005) on OECD countries, Zied Ftiti, *et. al.*, (2016) on selected OPEC countries, Farhad Taghizadeh-Hesary and Naoyuki Yoshino (2015) on emerging & developed economies, Malka Liaqat, *et. al.* (2021) on Pakistan economy, Gadea, *et,al*. (2016) on US economy, Nazir, Sidra & Qayyum (2014) on Pakistan, but oil price effects varies from country to country. For instance Akinleye and Ekpo, (2013) analyzed the macroeconomic effects of oil price and income shocks in Nigeria utilizing the Vector Autoregressive (VAR) approach. Positive oil price shocks compared to negative ones, have more noteworthy long-run impacts on real GDP, making inflationary tension and deteriorating nearby monetary standards. Kilic *et. al.* (2014) examined the impact of the European Economic and Monetary Union on the inflows of foreign direct investments into the Eurozone using panel data from 16 Group of 20 countries over the period 1999–2012. Real FDI inflows from 16 Group 20 countries found to be positively influenced by real GDP, GDP growth rate, and exchange rates, but negatively impacted by exchange rate volatility, inflation volatility, and distance.

Charfeddine, and Barkat, (2020) examined the Qatar's all out real GDP and the level of monetary broadening, as well as the unbalanced short-and long run results of oil price shocks. The results showed that in the short run, negative shocks greatly affect real oil prices and real oil and gas incomes on complete real GDP and non-oil real GDP than positive shocks do. Alekhina and Yoshino, (2018) examined the connection between the really macroeconomic signs of an oil exports and worldwide oil prices utilizing the vector Autoregressive (VAR) strategy. They concentrated on a non-OPEC oil exporter whose oil pay represents a sizable piece of its general product and spending plan pay. The outcomes showed that the real GDP, CPI expansion rate, loan cost, and swapping scale of the oil exports are essentially affected by changes in oil prices. Moreover, Kakanov *et.al.* (2018) investigated the detrimental effects of oil abundance on long-term economic growth for group of oil-exporting nations. They investigated whether a country's institutional and macroeconomic conditions have impact on the resource curse and made a distinction between the two main causes of resource curses: oil dependence and oil price volatility. The results revealed that short-term effects of oil price shocks tend to be asymmetrical: when prices rise, there is a positive growth effect; when price fall, there is no statistically significant effect. In the long run, it does not seem that oil price volatility has a statistically significant effect on GDP. Salisu *et.al*., (2018) analyzed the connection between energy consumption and economic growth in a variety of oil-exporting and oil-importing nations, they used annual data from 1980 to 2014. The empirical results show that, over the long run, energy consumption affects economic growth in both oil-exporting and oil-importing countries positively. Youssef and Mokni (2019) examined how oil market attempts to learn the unique connection between financial exchanges in countries that both produce and consume oil. Using GARCH they found that the connection between the oil and securities exchanges, as well as the financial exchanges of nations that import and sell oil, differs over the course of time. Gershon *et.al.* (2019) examined the impacts of unexpected changes in the cost of oil on agricultural countries that are net oil merchants. This research explored the relaxed relationship between oil prices and macroeconomic boundaries using vector autoregressive (VAR) model from 1980 to 2015. Blended results were recorded for the African countries of Sierra Leone, the Gambia, Liberia, and Cape Verde. Results from the VAR model propose that rise in oil price will briefly bring GDP per capita up in the selective nations. De Michelis *et. al.* (2019) used the time-series and cross-sectional contrasts to examine the effects of oil price changes on consumption across states in the United States. They found that rising oil costs lessen the use in nations that produce oil while increasing it in those that import it. Furthermore, rising oil costs are adverse for world and for the most part in the US.

On the other hand, according to Akinsola and Odhiambo, (2020) oil prices have no immediate impact on the economic growth, but effect growth in the long run. Aloui *et. al.* (2020) analyzed on the other hand with a view of Corona Virus pandemic, in this examination, the rise of the Coronavirus Pandemic and OPEC's inability to arrive at a creation quantity understanding prompted the emotional decrease in the cost of US raw petroleum to $30 on March 12, 2020. The outcomes showed that the S&P GS Indexes for energy items respond to COVID-19 shocks in different ways in light of central, social, and mental elements. Nyga-ukaszewska and Aruga (2020) studied the quantity of US and Japanese COVID-19 cases and energy prices with the aid of ARDL. They determine what the COVID-19 cases will mean for the business sectors for raw petroleum and flammable gas, The discoveries were made sense of by contrasts in how the pandemic advanced in the US and Japan, as well as by the different obligations that every country played in the worldwide energy markets. Chai and Jin, (2020**)** explored the unique connection between

flammable gas utilization and the worldwide oil price in China. The results show that the cointegration relation between China's absolute petroleum gas utilization and the world oil cost went through underlying adjustments during the worldwide monetary emergency of 2008.

Abdelsalam (2020) investigated the influence of crude oil price on the economic growth of Middle Eastern and North African (MENA) countries. Using panel quantile regression, results revealed that changes in oil prices and volatility have negative effect for each oil-exporting and oil-importing country. Mukhtarov *et. al.* (2020) utilized Structural Vector Autoregressive (SVAR) technique to look at the effects of oil price shocks on Azerbaijan's GDP per capita, over the time span from 1992 to 2019. The results show that rising oil prices emphatically affect GDP per capita and exchange turnover however has adverse effect on the worth of the Azerbaijani manat. Kebalo (2020) investigated the direct and nonlinear impacts of worldwide oil costs on Togo's monetary areas from 1970 to 2017. According to Kebalo (2021) shock to the world oil cost little affects the worth added of different financial areas. As was anticipated, Togo's monetary areas have no effect on worldwide oil cost markets, showing that as a little net shipper of oil, the country has no evaluating power on the global market. Liaqat *et. al.* (2022) analyzed the impact of oil prices on economic growth. According to Liaqat *et. al.* (2022), in Pakistan, economic growth is anti-growth with an increase in prices, and it responds negatively to economic growth in the long and short run. As a result, oil price inflation in Pakistan fails to have a significant beneficial impact on economic growth but it raises the general price level in the economy.

In nutshell, there are limited studies that focused on the oil price-economic growth nexus in the case of middle-income oil importing countries. The current study adds to the prior literature by examining the effect of oil price on economic growth in middle income countries by using utilizing panel data analysis techniques to the data over the period of 1990 to 2021. This study significantly contribute into literature as limited work has been done in the context of Middle Income Oil Importing Countries. This study will help the policy makers to develop new policy implications & suggestions to improve the growth of middle income countries.

MATERIALS AND METHODS

***Materials*:** The 22 middle income economies[2] were utilized to achieve the study objective. Yearly data obtained from the World Development Indicators, spreading over a time from 1990 to 2020.

The functional form of the model is following:

$$GDP = f(Real Oil Price + Inflation + Grossfixedcapitalformation + laborforce + Interestrate + Tradeopenness)$$

The econometric specification form of the model is given as:

$$GDP_{it} = \alpha_0 + \beta_1 ROP_{it} + \beta_2 INF_{it} + \beta_3 GFCF_{it} + \beta_4 LF_{it} + \beta_5 IR_{it} + \beta_6 TOP_{it} + \mu$$

In above equation GDP_{it} is gross domestic product measured in Growth Annual%, ROP_{it} is real oil price measured in US Dollar Per Barrels, INF_{it} is inflation rate measured in Consumer Price (Annual), $GFCF_{it}$ is gross fixed capital formation measured in % of GDP, LF_{it} is labor force which is taken in (%) of total population ages 15-64, IR_{it} is interest rate and TOP_{it} is trade openness which is taken in % of GDP. μ is error term.

Table 1 report the results of descriptive statistics. INF_{it} has the highest mean value followed byTOP_{it}. While ROP_{it} has the lowest mean value. INF_{it} shows the highest standard deviation showing the highest volatility as compared to other variables. Where as GDP_{it} is least volatile as its standard deviation is 4.27 only.

Table 2 describes correlation matrix between all variables based on panel data for 22 Asian economies. The results of correlation analysis reveal that most of the variables have significant value of correlation coefficient. It is important to mention that all variables have positive and significant correlation with each other. Highest correlation is observed between $GFCF_{it}$ and GDP_{it} at coefficient of 0.35, and also

Table 1. Descriptive statistics using 1990-2020 data for Asian countries.

Variables	Description	Sources	Mean	Std.Dev	Minimum	Maximum
ROP	Real oil price US Dollar Per Barrels	WDI	3.71	20.69	1.64	9.38
GDP	Gross domestic product growth annual %	WDI	4.04	4.27	22.90	14.34
LF	Labor force (%) of total population ages 15-64	WDI	65.86	10.90	41.53	89.65
GFCF	Gross fixed capital formation % of GDP	WDI	23.70	6.95	11.45	44.91
INF	Inflation % of GDP	WDI	88.16	548.17	-2.59	481.66
T	Trade openness % of GDP	WDI	68.47	42.38	15.15	220.40
RI		WDI	6.10	21.14	160.20	113.00

[2] Bangladesh, Belarus, Brazil, China, Colombia, Egypt, Fiji, Libya, Malaysia, Maldives, Indonesia, Jordan, Kenya, Pakistan, Peru, Philippines, Sri Lanka, Thailand, Tanzania, Ukraine, Vietnam

between INF_{it} and LF_{it} followed by $GFCF_{it}$ and LF_{it} at coefficient of 0.30.

Table 2. Correlation Matrix using 1990-2020 data for Asian countries.

	ROP	GDP	LF	GFCF	INF	T	RI
ROP	1.0000						
GDP	0.0350	1.0000					
LF	0.0356	0.0399	1.0000				
GFCF	0.1108	0.3580	0.3033	1.0000			
INF	0.0028	0.3539	0.0138	0.0330	1.0000		
T	0.0410	0.0456	0.0899	0.1218	0.0400	1.0000	
RI	0.0042	0.2105	0.0180	0.1683	0.4411	0.2817	1.0000

***Methods*:** First of all Levin, Lin, and Chu (2002) (LLC) and Im, Pesaran, and Shin (2003) (IPS) unit root tests have been used for the current investigation. A pooled panel unit root test can be performed using LLC, and IPS performs heterogeneous panel unit root test. A panel unit root test was introduced in the context of a heterogeneous panel by Im, Pesaran, and Shin (IPS) (2003). This test essentially applies the ADF test to individual series, allowing for the unique short-run dynamics of each series. However, the overall t test statistic is based on the arithmetic mean of the ADF statistic for each particular country. Depending on how the individual specific intercepts and temporal trends were handled, created a number of pooled panel unit root tests with different specifications. The autoregressive coefficient, which shows whether a unit root problem exists or not, must be homogeneous in this test, but the intercept and trend may differ between different series. LLC unit root test follows ADF regressionfor the investigation of unit root hypothesis.

Panel cointegration tests are used in the current investigation (PCTs). Pedroni (1999, 2004) developed seven test statistics to investigate the null hypothesis that cointegration does not exist in nonstationary panels. Both short-run dynamics and long-run slope and intercept coefficient variability in the panel are supported by the seven test statistics. In contrast to traditional time-series analysis, this tool does not account for normalization or the precise number of cointegrating relationships. The hypothesis test assesses the strength of the evidence, or lack thereof, for cointegration in the panel among two or more variables. Pedroni proposed a test for the cointegration analysis that permitted variability in the cointegration vector (Asteriou & Hall, 2007). This test examines the differentiation of the cross-section under the alternative hypothesis in addition to analysing dynamic and stationary effects to be different across the cross-sections of the panel.

Pedroni test is covered by seven separate cointegration tests, which were further classified into two categories: within dimensions and between dimensions. Within-dimension tests make up the first category's four tests, while between-dimension tests make up the second category's three more exams (Asteriou & Hall, 2007). The first test falls under the category of a variance ratio test, the second test is comparable to the Phillips Peron (PP) (rho) statistic, and the third test is comparable to the PP (t) statistic. The Augmented Dickey Fuller (ADF) (t) statistic is a parametric statistic that makes up the fourth statistic. The three tests in the second category, together with the other two, are comparable to the PP (rho) statistic (t) and ADF (t) Statistics (Pedroni,1999,2004).

Pedroni co-integration analysis may be seen in Equation below.

$$X_{it} = \alpha_i + \beta_{it} + \beta_i Y_{it} + \mu_{it}$$

Only the existence of the LR equilibrium relationship between panel variables is offered by PCTs, as mentioned in the previous section. They do not, however, calculate the LR coefficients. The next step is to estimate the LR coefficients once we have discovered evidence of cointegration between the variables. Traditional OLS estimators are biased and inconsistent when used with cointegrating panel models, which can lead to erroneous regressions when applied to non-stationary variables (Asteriou and Hall, 2016). Therefore, it is not applicable when variables are found to be non-stationary. Moreover, heterogeneity is another issue in panel data models with differences in means among the cross-sections and differences in individual cross-sections feedback to short-term disturbances from LR equilibrium. Philips and Hansen (1990) developed a fully modified OLS (FMOLS) that is modified for autocorrelation and endogeneity. These techniques permit for larger flexibility in the occurrence of heterogeneity in the observed cointegrated vector. In other words, FMOLS produces consistent estimates along with the control on regressors endogeneity and problem of correlation.

RESULTS AND DISCUSSION

Table 3 shows the result for unit root test. It is clearly visible that both LLC and IPS showing that all the variables are non stationary at level as probability values are quite insignificant. However, variables are stationary at first difference.

Table 4 depicts the results of the Pedroni Cointegration test. Panel PP and Panel ADF are significant for within-dimension results, whereas Group PP and Group ADF are significant for inter-dimension results. In other words, four out of seven statistics are important.

The H0 hypothesis (no cointegration between the series), was rejected by the Pedroni cointegration test for model, leading to the acceptance of H1. For selected countries, it can be said that there is a long-term relationship between the variables.

As per the results in Table 5, a 1% increment in the real oil price leads to 0.50% decrease in economic growth. The results showed that oil price has a negative impact on real GDP per capita in the long run because middle income countries mostly depend on crude oil for their energy needs and is consistent with Behmiri and Manso (2013), and Kose Baimaganbetov (2015). The findings explain that a sustained increase in oil

Table 3. Panel unit root test.

Variable	GDP	ROP	GFCF	INF	LF	TOP	IR
LLC[1] unit root test (At level)							
Statistic	1.071	-4.097	-1.860	8.423	0.472	-1.139	2.846
P- value	0.858	0.000	0.031	1.000	0.681	0.127	0.742
LLC unit root test (At 1st Difference)							
Statistic	-5.968	-17.609	-14.678	-33.359	-10.949	-17.605	-28.417
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPS unit root test (At level)							
Statistic	1.071	-4.097	-1.860	8.423	0.472	-1.139	2.846
P- value	0.858	0.000	0.031	1.000	0.681	0.127	0.742
IPS unit root test (At 1st Difference)							
Statistic	-5.968	-17.609	-14.678	-33.359	-10.949	-17.605	-28.417
P- value	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 4. Pedroni Cointegration test.

	Panel v	Panel ρ	Panel PP	Panel ADF	Group ρ	Group PP	Group ADF
Statistic	-0.791	1.746	-4.445	-4.308	2.578	-8.079	-6.925
P- value	0.785	0.959	0.000	0.000	0.995	0.000	0.000

Variables	ROP	LF	INF	GFCF	IR	TOP
Statistic	-0.502	0.023	-0.044	0.199	0.395	0.380
p-value	0.000	0.000	0.000	0.000	0.000	0.000

price will reduce growth and deteriorate the external and fiscal balance of the sample of oil-importing countries. Increasing oil prices also decrease savings and negatively impact fuel subsidies, which are substantial in most low-income countries. Therefore, for oil-importing developing economies, upsurge in the price of oil should economic growth and improve external and fiscal balances, thereby reducing macroeconomic vulnerabilities associated with commodity price volatilities. Therefore, the long-run results support theoretical literature on the impact of oil price on economic growth for oil-importing countries (see Suleiman, 2013; Behmiri and Manso, 2013).

The control variables have a significant impact on GDP. Labor force (LF), 1% increase in the labor force leads to a 0.02% increase in GDP, which sounds like a healthy relationship between GDP/ Economic Growth and the Labore Force, when the oil is imported for production purpose then there is need of labor is born, that's why if the labor force is found in abundance in any nation that means it will give profitable output in future. On the other hand, the results of Inflation (INF) are showing an inverse relationship toward GDP, it shows if a 1% increase exists in Inflation (INF) then there is a 0.04% decline in GDP, which clearly describes that the high oil prices give shocks to inflation also. Which causes instability in economic growth. And these results are consistent with Talha, *et.al.* (2021) and Taghizadeh-Hesary *et. al.* (2019).The findings revealed that there is positive relationship between ROP & INF.As the rise in oil price leads to increase in inflation. Gross Fixed Capital Formation (GFCF) also shows positive relationship toward economic growth, as a 1% increase in GFCF leads to a 0.199% increase in GDP, which is a profitable sign for any economy. Similarly, the 1% increase in rate of interest leads to 0.39% rise in EG, which is not a good sign for the economy. Which also cause of less demand. Moreover, if there is 1% increase in trade then the EG will expand up to 0.38%, if the trade increases, then the developing countries may able to meet their expenditures. Results are consistent with the Kanu *et. al.* (2014). The findings of the study exposed the GFCF has significant impact on economic growth. And also contributes to economic formulation and implementation of policies.

Our results are consistent with, O. Akinsola & M. Odhiambo (2020), who studied the asymmetric effect of oil price on economic growth of low-income oil importing countries. Their study was based on the Sub-Saharan African Countries. In their research they revealed the negative relationship between oil price and economic growth by using the NARDL (econometric technique) of low-income oil importing countries but these countries were Sub Saharan African Countries. In case of middle-income countries, the relationship between oil price and economic growth is also negative but, in this research, the FMOLS is employed to find the significant results. But the results are same in the case of Sub-Saharan African Countries (low-income oil importing countries) and Middle-Income Oil Importing Countries. Similarly in the case of oil importing and exporting countries, the oil price effect negatively. Similarly, there are high oil prices, the high oil prices give an upward hit to inflation as it is discussed in the Kiani (2011). Due to inflation, the low-income countries have to import more expensive imported products. If we take real interest rate, and trade openness, these are also showing the highly positive impacts of oil price on the GDP growth of middle-income oil importing countries.

***Conclusion*:** This research study corroborates the body of literature on the oil price-economic growth relationship using

annual data from 22 middle income countries from period 1990 to 2020. The core intention of present research is to discover international evidence concerning whether oil price has effect on economic growth or not. To this end, we have checked for stationarity of variables of the study by using IPS and LLC unit root tests. With the use of the Pedroni (1999) cointegration test, we tested the long run relation between the variables. Then, we employed "fully modified ordinary least square" (FMOLS) technique for the estimation of coefficients in the long run. This techniques provides the consistent estimates in the case of short panel and deal with the problem of heterogeneity efficiently. According to empirical findings, our independent variable namely oil price positively effect economic growth in middle income countries. We may conclude that oil price can significantly and considerably deteriorate the process of economic growth in middle income countries. We have also studied the impact of macroeconomic factor on economic growth. We discovered that labor force and GFCF are significantly associated with economic growth. Thus, it is impossible to ignore the impact of labor force and GFCF on economic growth. Inflation is inversely related to economic growth, increase in inflation leads to decrease in economic growth. The impact of interest rate and trade is also found to be positive. Our empirical findings are consistent with the early findings of (Hamilton, 1985), (Bekhet *et. al.* 2009), (Bhushal, 2010), (Subhani *et. al.*, 2012), (Ahmad, 2013), (Malik, 2008), (Jimenez-Rodriguez *et. al.* 2005) and (Kiani, 2011) as the findings of all these mentioned studies revealed negative relationship between oil price and GDP. As the rise in crude oil prices directly affect the cost of production, which adversely affect production level, and ultimately effect the overall economic growth of a country

***Authors Contributions statement*:** Bukhtawar Babar Conceptualization; Data Collection; Data Curation; Formal analysis; Writing Saira Arsh: Methodology; Software; Formal analysis; Writing – Review Samia Nasreen: Writing - Review & Editing; Visualization

Conflict of interest: The Authors declare that there is no conflict of interest
***Ethical statement*:** No
***Availability of data and material*:** Upon request
Acknowledgement: *No*
Code Availability: *Upon request*
***Consent to participate*:** Not applicable
***Consent for publication*:** Not applicable

REFERENCES

Abdelsalam, M. A. M. 2020. Oil price fluctuations and economic growth: The case of MENA countries. Review of Economics and Polictical Science doi: https://doi.org/10.1108/REPS-12-2019-0162.

Ahmad, F. 2013. The effect of oil prices on unemployment: Evidence from Pakistan.Businessss and Economics Research Journal 4:43-57.

Akinley, S. O., and S.J. Ekpo. 2013. Oil price shocks and macroeconomic performance in Nigeria. Journal of Economics and Sustainable Development 7:565-624.

Akinsola, M. O., and N.M. Odhiambo. 2020. Asymmetric effect of oil price on economic growth: Panel analysis of low-income oil-importing countries. *Energy Report* 6:1057-1066.

Alekhina, V., and N. Yoshino. 2018. *Impact of world oil prices on an energy exporting economy including monetary policy*. ADBI Working Paper 828. Tokyo: Asian Development Bank Institute.

Aloui, D., S. Goutte, K. Guesmi and R. Hchaichi 2020. COVID 19's impact on crude oil and natural gas S&P GS Indexes. halshs-02613280, doi: https://shs.hal.science/halshs-02613280

Asteriou, D., and S.G. Hall. 2007. Applied Econometrics: a modern approach, revised edition 46:117-155.

Behmiri, N. B., and J.R. Manso. 2013. How crude oil consumption impacts on economic growth of Sub-Saharan Africa? Energy 54:74-83.

Bekhet, H. A., and N.Y.M. Yusop 2009. Assessing the relationship between oil prices, energy consumption and macroeconomic performance in Malaysia: co-integration and vector error correction model (VECM) approach. International Business Research 2:152-175.

Bhusal, T. P. 2010. Econometric analysis of oil consumption and economic growth in Nepal. Economic Journal of Devcelopment Isssues 11:135-143.

Chai, J., and Y.J.E. Jin . 2020. The dynamic impacts of oil price on China's natural gas consumption under the change of global oil market patterns: An analysis from the perspective of total consumption and structure. Energies. 13:867.

Charfeddine, L., and K. Barkat. 2020. Short-and long-run asymmetric effect of oil prices and oil and gas revenues on the real GDP and economic diversification in oil-dependent economy. Energy Economics 86:104680.

De Michelis, A., T. Ferreira, and M. Iacoviello. 2019. Oil prices and consumption across countries and US States.International Journal of Centeral Banking 32:32-46 .

El-Badri, A. 2011. *New frontiers in the oil & gas industries: The technological difference.* Paper presented at the The 15th IIES Conference & Exhibition.

Ftiti, Z., K. Guesmi, F. Teulon and S. Chouachi 2016. Relationship between crude oil prices and economic growth in selected OPEC countries.The Journal of Applied Business Resarch 32:11-22.

Gadea Rivas, M. D., A. Montañés Bernal and A. Gómez Loscos 2016. Oil price and economic growth: a long story? Econometrics 4:41.

Gershon, O.,N.E. Ezenwa and R.J.H. Osabohien 2019. Implications of oil price shocks on net oil-importing African countries. Heliyob 5:e02208.

Hamilton, J. D. 1985. Historical causes of postwar oil shocks and recessions. *The Energy Journal 6*(1): 97-116.

Jiménez-Rodríguez, R., and M. Sánchez. 2005. Oil price shocks and real GDP growth: empirical evidence for some OECD countries. Applied Economics 37:201-228.

Kakanov, E., H. Blöchliger and L. Demmou. 2018. Resource curse in oil exporting countries. OECD Economics Department Working Papers, No. 1511, OECD Publishing, Paris.

Kanu, S. I., and B.A. Ozurumba. 2014. Capital formation and economic growth in Nigeria. African Journal of Business and Economic Devlopment 14:43-58.

Kebalo, L. J. E. B. 2020. Effects of oil price shocks on economic sectors of net oil-importing countries: case of Togo. Economics Bulletin 40:2689-2703.

Kiani, A. 2011. Impact of high oil prices on Pakistan's economic growth. International Journal of Business and Social Science 2:209-216.

Kilic, C., Y. Bayar and F. Arica. 2014. Effects of currency unions on foreign direct investment inflows: the European economic and monetary union case. International Journal of Economics and Financial Issue 4:8-15.

Liaqat, M., A. Ashraf, S. Nisar and A. Khursheed. 2022. The impact of oil price inflation on economic growth of oil importing economies: Empirical evidence from Pakistan. Economics and Business 9:167-176.

Malik, A. 2008. Crude oil price, monetary policy and output: The case of Pakistan. Pakistan Development Review 47:425-436.

Mork, K. A. 1989. Oil and the macroeconomy when prices go up and down: an extension of Hamilton's results.Journal of Political Economy 97:740-744.

Mukhtarov, S. J. I. J. o. E. E. and Policy. 2020. The effects of oil prices on macroeconomic variables: Evidence from Azerbaijan.

Nazir, S., and A. Qayyum. 2014. Impact of oil price and shocks on economic growth of Pakistan: Multivariate Analysis. International Journal of Energy Economics and Policy 10:72-80.

Nyga-Łukaszewska, H. and K. Aruga. 2020. Energy prices and COVID-immunity: The case of crude oil and natural gas prices in the US and Japan. Energies 13:6300.

Pedroni, P. 2004. Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. Econometric Theory 20:597-625.

Pedroni, P. 1999. Critical values for cointegration tests in heterogeneous panels with multiple regressors. Oxford Bullitin of Economics and Statistics 61:653-670.

Phillips, P. C. and B.E. Hansen 1990. Statistical inference in instrumental variables regression with I (1) processes. The Review of Economic Studies 57:99-125.

Salisu, A. A., T. F. Oloko, I., Okunoye, O. Opeloyeru and N. Olabisi. 2018. Energy consumption and economic growth in oil importing and oil exporting countries: A Panel ARDL approach. Working Papers 048, Centre for Econometric and Allied Research, University of Ibadan.

Subhani, M. I., S. Hasan. I. Qavi and A. Osman 2012. An investigation of granger causality between crude oil price and inflation in Pakistan. Scocial and Economic Issues 100:168-174.

Suleiman, M. 2013. Oil demand, oil prices, economic growth and the resource curse: An empirical analysis: University of Surrey (United Kingdom).Oxford Review of Economic Policy 21:19-42.

Taghizadeh-Hesary, F., N. Yoshino, E. Rasoulinezhad and Y. Chang. 2019. Trade linkages and transmission of oil price fluctuations.Energy Policy 133:110872.

Taghizadeh-Hesary, F. and N. Yoshino 2015. Macroeconomic effects of oil price fluctuations on emerging and developed economies in a model incorporating monetary variables. ADBI Working Papers 546, Asian Development Bank Institute.

Talha, M., M. Sohail, R., Tariq and M. Ahmad. 2021. Impact of oil prices, energy consumption and economic growth on the inflation rate in Malaysia.Cuadernos de economia 44: -32.

Youssef, M. and K. Mokni 2019. Do crude oil prices drive the relationship between stock markets of oil-importing and oil-exporting countries? Economies 7:70.